

## A Rare Case Report of Successful Pregnancy with Fluid in the Endometrium

A Madhu Mitha<sup>1\*</sup>, Smisha Sridev<sup>2</sup>, Chitra Ramanathan<sup>3</sup> and VM Thomas<sup>4</sup> and Punithavathi<sup>5</sup>

<sup>1</sup>DNB (OG), Senior Resident, Chennai Fertility Centre and Research Centre, Chennai

<sup>2</sup>DNB (OG), FNB (Reproductive Medicine) Senior Consultant, Chennai Fertility Centre and Research Centre, Chennai

<sup>3</sup>MRCOG, CCT, Senior Consultant, Chennai Fertility Centre and Research Centre, Chennai

<sup>4</sup>Chairman, Chief Embryologist, Chennai Fertility Centre and Research Centre, Chennai

<sup>5</sup>DNB (OG), Senior Consultant, Chennai Fertility Centre and Research Centre, Chennai

### \*Corresponding author

A Madhu Mitha, DNB (OG), Senior Resident, Chennai Fertility Centre and Research Centre, Chennai; E-mail: madhumitha5000@yahoo.com

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### Abstract

Endometrial cavity fluid (ECF) is a clear sonolucent fluid collection between the layers of the endometrial cavity. There is generally a consensus that if excessive fluid is noted in the uterine cavity, embryo implantation will be affected. Hydrosalpinx contributes to most of the cases of ECF. Other causes include endometriosis, PCOS and endometritis. Some cases are idiopathic and recurrent and often pose a challenge to the treating physician. Here in we report a rare case of successful pregnancy in a patient with ECF which was resistant to aspiration multiple times during endometrial preparation.

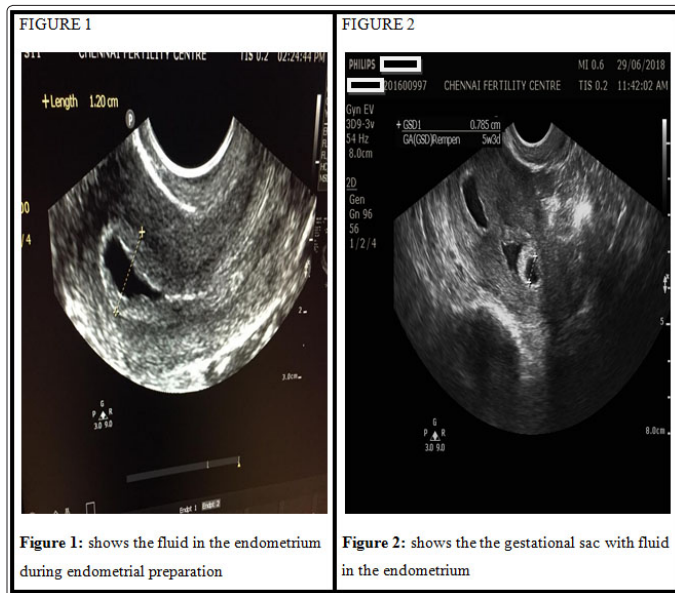
### Case Report

A 31-year-old woman with 8-years history of secondary infertility attended our clinic. Previously she had a left ectopic gestation after a spontaneous conception 2 years back which was treated surgically by left salpingectomy. Her ultrasonography was unremarkable. Husband semen analysis was normal. Hysterosalpingography showed bilateral tubal block. In view of the tubal factor infertility In vitro fertilization (IVF) was planned. Hysteroscopy was done and was normal and laparoscopy with bilateral tubal clipping was also done in the same sitting. The patient underwent ovarian stimulation with 275 IU of recombinant FSH. There were totally 3 grade A and 2 grade B embryos. At the time of oocyte collection, fluid was noted in the endometrial cavity which persisted 5 days post egg collection. In view of persistent fluids in the endometrial cavity. Fresh embryo transfer (ET) was abandoned and the patient was planned for frozen ET.

The patient underwent endometrial preparation after 2 months. Fluid was again noted in the endometrial cavity as shown in figure 1. After discussion with the patient, aspiration was done with an empty embryo transfer catheter from the uterine cavity. During the

procedure 5 mL of clear fluid was aspirated from the cavity and sent for microscopy, culture, and sensitivity including chlamydia screening. The specimen was subsequently found to be sterile. The uterus was rescanned after the aspiration and endometrial thickness was found to be 9 mm and no fluid was demonstrated within the cavity, only to reappear next day. So the embryo transfer was cancelled.

Subsequently patient had her next 2 endometrial preparation cancelled due to the persistent endometrial fluid in spite of multiple aspirations. Hysteroscopy was repeated and was normal. In the next cycle of endometrial preparation, after discussion with the patient who did not wish to postpone the embryo transfer, the endometrial cavity with fluid ~12 mm was noted at embryo transfer which was aspirated and embryos were transferred immediately after fluid aspiration. The patient subsequently conceived and a recent ultrasound scan confirms a single live intrauterine pregnancy with fluid in the endometrial cavity as shown in figure 2. Subsequent scan at 7 weeks shows clearing of the fluid as shown in figure 3. The patient is currently 26 weeks and her antenatal period so far is uneventful.

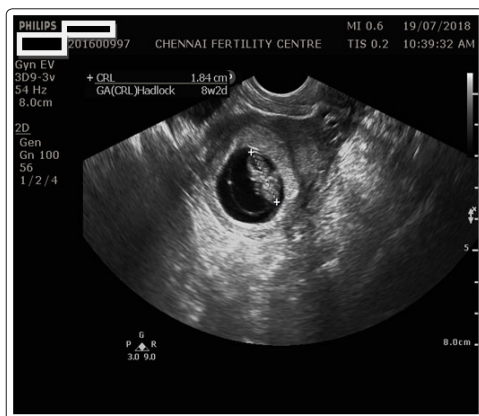


**Figure 1:** shows the fluid in the endometrium during endometrial preparation

**Figure 2:** shows the the gestational sac with fluid in the endometrium

### Introduction

Implantation is the most important step of fertilization. It occurs as a result of complex interaction between the embryo and endometrium and multiple potential molecular and biophysical markers of implantation have been identified at the endometrial and embryonic level [1]. We do not fully understand what allows one embryo to implant and another identical one not to. Endometrial cavity fluid (ECF) is a clear sonolucent fluid collection between the layers of the endometrial cavity. Though ECF has attracted attention recently because of the increasing number of cases and the exact significance of ECF remains unclear. There is generally a consensus that if excessive fluid is noted in the uterine cavity embryo implantation will be affected. A review of the literature reveals there have not been any documented cases of excessive fluid within the uterine cavity at the time of embryo transfer and a resulting pregnancy. Here in we report a rare case of successful pregnancy in a patient with ECF which was resistant to aspiration multiple times during endometrial preparation



**Figure 3:** scan at 8 weeks showing spontaneous clearing of fluid in the endometrium

### Discussion

Embryo apposition and attachment occurs as a result of complex interaction between the embryo and the endometrium. ECF hinders this process in implantation some studies suggest hydrosalpinx

as a possible cause of ECF, but it's is not a consistent finding in all the cases with ECF. One of the explanations is that fluid of hydrosalpinges May reflux into the uterine cavity and accumulates locally and disturbs the local milieu, being toxic to the embryo. Several studies have shown the negative impact of hydrosalpinx on the outcome of ART [2,3]. Some researchers also found that ECF observed in patients with PCOS and non-tubal infertility may represent a different clinical entity from that in patients with tubal diseases [4,5]. Subclinical intrauterine infection or chronic endometritis due to PID or tuberculosis leading to local inflammation and resultant exudates with cytokines was implicated as a cause of excessive uterine cavity fluid.

Though Drbohlay et al., suggested the negative association between intrauterine infection and implantation rates, he did not point out ECF to be the confounding factor responsible for the same [6]. Sharara et al., found that ECF was due to abnormal endometrial development and differentiation around the time implantation [7]. Pelvic endometriosis is also suggested to be one of the main causes of fluid accumulation in non-tubal factor patients. Two main factors in endometriosis contributing to ECF are pelvic peritubal adhesions causing tubal obstruction and cervical stenosis causing uterine fluid accumulation as suggested by Gurgan et al., who reported a case of fluid accumulation due to endocervical canal obstruction by an endocervical cyst, which was evident after HCG administration [8].

The timing of fluid collection and the amount collected are important in determining the impact on the pregnancy outcome. Ovarian stimulation plays an important role in the development and maintenance of ECF but it is transient, usually less than 3 mm in the largest diameter, most of the time and disappears by the time of embryo transfer. Akman et al., showed that the almost 88.9% of patients with PCOS undergoing stimulation had ECF after HCG administration [9]. However most of them were little in amount and disappeared before the day of embryo transfer. Higher levels of serum estrogens or gonadotrophins and resultant changes in the aquaporins expression and fluid transport might be the cause of ECF development. It is not difficult to manage such clinical scenario unlike our case because even if the ECF persist or larger in diameter, fresh cycle may be cancelled in such patients and frozen embryo might be transferred after endometrial preparation in the subsequent cycles. He et al., suggested that larger amount of ECF equals to or higher than 3.5 mm in the anterior–posterior diameter and ECF in such large amounts only persisted and even enlarged until during implantation period [10]. Small amount of ECF did not appear to affect the outcome of ART.

Treatment of ECF depends on the cause leading to it. During endometrial preparation if there is ECF in the presence of hydrosalpinx it is favorable to clip the tubes and then proceed on with the embryo transfer. A recent Cochrane database s review showed that both salpingectomy and proximal tubal occlusion improves ART outcome in patients with hydrosalpinges [11]. In patients with fluid accumulation in the previous cycles but without any pelvic pathology, there is no evidence that surgical treatment is beneficial. If there is endometriosis in a patient with recurrent ECF ,laparoscopic adhesiolysis, cervical dilatation or suppression with GnRH agonist depot before the endometrial preparation may be tried depending on the factor contributing .In patients with chronic endometritis (hysteroscopy evidence of endometritis) a course of antibiotics may be tried. Though the combination of ofloxacin and

tinidazole for a period of 3 days may be tried and being used in clinical practice, its usage is still controversial and requires more studies to back up. We personally have seen quite a number of patients with chronic endometritis with ECF, settling down with the 3-5 day course of antibiotics. As indicated earlier further research is needed in this area before recommending this line of treatment in the clinical practice.

Diagnostic challenge occurs when ECF occurs in patients without a known cause or ECF not settling with treatment or occurring even after tubal clipping just similar to our case. In such cases, endometrial fluid aspiration can be tried during endometrial preparation. Transvaginal sonographic ECF aspiration was originally designed for the treatment of patients with ECF who did not want to defer their embryo transfer. In case of small amount ECF and those due to non-tubal cause transvaginal endometrial fluid aspiration is a good option. Gaastal et al., found no difference in the implantation between patients with ECF undergoing aspiration and the control group (36 vs. 33%,  $P = 0.84$ ) [12]. Griffiths et al., reported a successful pregnancy in a patient with tubal factor infertility (post tubal clipping) after 7 ml ECF aspiration at the time of embryo transfer [1].

## Conclusion

There exists lots of literature of the ECF being detrimental to the transferred embryo. Whether this ECF is really detrimental in recurrent and idiopathic cases? Can we proceed with embryo transfer in such cases?, we still don't have straight answers for these questions. Though our case report on successful pregnancy with ECF throws some light on this grey area more studies and research in this area is needed to answer the above questions.

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## References

1. Klentzeris LD, Bulmer JN, Li TC, Morrison L, Warren A, et al. (1991) Lectin binding of endometrium on women with unexplained infertility. *Fertil Steril* 56: 660-667.
2. Griffiths AN, Watermeyer SR, Klentzeris LD (2002) Fluid within the endometrial cavity in an IVF cycle—a novel approach to its management. *J Assist Reprod Genet* 19: 298-301.
3. Sharara FI, McClamrock HD (1997) Endometrial fluid collection in women with hydrosalpinx after human chorionic gonadotrophin administration: a report of two cases and implications for management. *Hum Reprod* 12: 2816-2819.
4. Lee RK, Yu SL, Chih YF, Tsai YC, Lin MH, et al. (2006) Effect of endometrial cavity fluid on clinical pregnancy rate in tubal embryo transfer (TET). *J Assist Reprod Genet* 23: 229-234.
5. Levi AJ, Segars JH, Miller BT, Leondires MP (2001) Endometrial cavity fluid is associated with poor ovarian response and increased cancellation rates in ART cycles. *Hum Reprod* 16: 2610-2615.
6. Drbohlav P, Halkova E, Masata J, Rezacova J, Cerny V, et al. (1998) The effect of endometrial infection on embryo implantation in the IVF and ET program. *Ceska Gynekol* 63: 181-185.
7. Sharara FI, Prough SG (1999) Endometrial fluid collection in women with PCO under going ovarian stimulation for IVF.

Areport of four cases. *J Reprod Med* 44: 299-302.

8. Gurgan T, Urman B, Aksu T, Yarali H and Kisinisci HA (1993) Fluid accumulation in the uterine cavity due to obstruction of the endocervical canal in a patient undergoing in vitro fertilization and embryo transfer. *J Assist. Reprod. Genet* 10: 442-444.
9. Akman MA, Erden HF, Bahceci M (2005) Endometrial fluid visualized through ultrasonography during ovarian stimulation in IVF cycles impairs the outcome in tubal factor, but not PCOS, patients. *Hum Reproduct* 20: 906-909.
10. He RH, Gao HJ, Li YQ, Zhu XM (2010) The associated factors to endometrial cavity fluid and the relevant impact on the IVF-ET outcome. *Reproduct Biol Endocrinol* 8: 46.
11. Johnson N, van Voorst S, Sowter MC, Strandell A, Mol BWJ (2010) Surgical treatment for tubal disease in women due to undergo in vitro fertilisation. *Cochrane Database Syst Rev* 20: CD002125.
12. Gastal EL, Jacob JCF, Gastal MO, Ginther OJ (2007) Accumulation of fluid in the infundibulum during the estrous cycle in mares. *J Equine Veterinary Sci* 27: 251-259.

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